

With Government Support to the Latest Drying Technology – Basis for Longstanding Partnership

Two companies which were established in the nineties and have become well-known specialists in their respective fields entertain longstanding relations on a partnership basis. Their unifying element is a large number of drying systems used at various sites and in various processes, and all working successfully.

We are talking about BIA Kunststoff- und Galvanotechnik GmbH & Co. KG of Solingen, Germany, and Harter GmbH of Stiefenhofen, Germany. BIA supplies prestigious automotive customers worldwide with attractively refined, structurally and technically sophisticated components for the interior and exterior. BIA has a workforce of 1,300 and produces almost 3,000 articles at five sites across the globe. BIA plates plastic blanks in fully automatic electroplating facilities using state-of-the-art technology and meeting environmental regulations in conformance with REACH requirements. The same standards apply to all BIA sites. Once refined items must also be dried. This is where drying system manufacturer Harter comes in. Based in Southern Germany, Harter employs almost 100 staff at their production site. Harter has been totally focussed on energy-saving drying for more than 30 years. They got started with sludge, which is still an important line. Today, however, Harter mainly develops solutions such as for items plated in subcontract or in-house plating lines. Clients also include the pharmaceutical industry, manufacturers of medical devices, the watchmaking industry and precision technology businesses. Harter develops and designs special solutions for this clientele and for other trades. The first contact between BIA and Harter dates back to 1999 because the first heat




Alexander Zabel (right), Maintenance Manager, together with Reinhold Specht (left), managing owner of Harter, and Heinz Becker (centre), a long-time business friend of BIA Management and Harter representative (Photograph courtesy by Harter)

pump based condensation drying system was commissioned at Solingen, Germany, as early as in 2000. The persons involved, however, have of course changed for both parties. Alexander Zabel and Reinhold Specht have co-operated successfully for more than ten years now. Zabel and Specht have worked hand in hand on the projects they have got off the ground so far. Reinhold Specht, managing owner of Harter, has

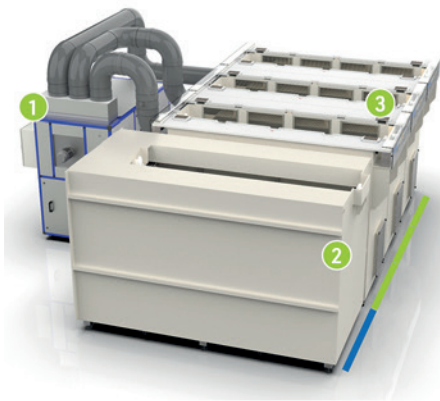
developed their drying technology from the bottom up. Together with his team, he has worked out hundreds of individual solutions year after year. Alexander Zabel, Maintenance Manager of BIA, has found, both for himself and for BIA, the right partner in Harter for matters of drying. The two companies have so far realized mutual projects comprising a total of 30 drying systems in Germany, Slovakia, Mexico, and China.



27  Rack dryer / Rack dryer with blow-off

2  Blow-off stations

 Location Germe



- 1 1 off 1AIRGENEX® 15.000
- 2 1 off Air Blowing Station with two movable, vertical, special nozzles
- 3 3 off Rack Dryer

Temperature
60 °C approx.

Rated power
in production operation
39,8 kW

Air Blowing
1 cycle

Drying
3 cycles

BIA's Solingen project in figures

(Photograph courtesy by Harter)

The Harter systems are used for either drying refined plastic components or for drying rack frames. BIA's cycle times, as in many other production facilities, are very short. And, of course, very complex items involving much water entrapment happen to be dried. BIA also require high standards to be met in terms of freedom from staining. The following example illustrates a representative solution for all projects Harter has realized for BIA.

Precious Time

In 2018, BIA needed to dry special components such as buttons, knobs, keys, covers, and housings for the automotive industry. Some of these components have much water entrapped. They were surface refined in the production line. The existing dryer, however, failed to produce the required quality, that is to say the components were not only dried incompletely but they were also stained. So, the goal of the new investment was evident – surfaces perfectly dry and perfect in appearance. Harter designed and built a drying system comprising several compo-

nents. It includes a dehumidification module, an air blowing station, and three drying chambers. The dehumidification module produces the process air. In the air blowing station, the components are relieved of the better part of the water entrapped. This is done using two movable special nozzles. Harter's air blowing station uses non-compressed air. Subsequently, using the existing product carrier transfer device of the plating line the product carriers are transferred to the three drying chambers in turn. The process temperature of 60 °C maximum is easy on both the plastics and the workers. There is also no impact on the production area or on the environment as the heat pump based condensation drying system is closed air-wise. There is no exhaust air because the process air is fully recirculated. Our components are dried within a total of eleven minutes, emphasizes Alexander Zabel contentedly. Earlier on, BIA employees had to inspect the components for absence of water staining. Now that the new drying technology has greatly improved product quality, and

the process has become reproducible BIA could largely reduce this effort. Today, the plastic components are unracked, and some of them finally packaged right away. *This was an additional major optimization step,* explains Alexander Zabel.

Precious Process Air

Each Harter drying system needs to include a so-called dehumidification module which conditions the required process air and is also responsible for the condensation process. This Airgenex® module is connected to the system through insulated ducting. It provides extremely dry air passed over or, in the case of bulk material, through the items to be dried. By its very nature, this air quickly absorbs any moisture present. When returned to the dehumidification module, the air is cooled and the humidity condenses to form water. The air is then reheated, in two stages, and recirculated, again in two stages, to the dryer. The dry air alone does not ensure successful drying. The air, by its very nature, follows the path of least resistance. The point is to route the air appropriately because the unsaturated air must be targeted on or through the items to be dried. *We have acquired very much know-how in this respect over the decades,* says Reinhold Specht. And he adds: *Only by perfectly combining air dehumidification and air routing is it possible to achieve such great technological success.*

Precious Energy Recirculated

Harter's heat pump technology has always been way ahead of its time. Pioneering the market Harter devised a fully closed system. The air remains inside the system. This relieves humans, machines, and materials of the impact of moisture. And the energy remains inside the system. It is



ny / Solingen



Location Slovakia



Location Mexico



Location China / Beijing, Wuxi

SURFACES

recycled, it saves time and money, and goes easy on precious resources.

Over all these years, economizing on energy was just a nice side effect in many projects. This has, of course, changed fundamentally in view of the recent events. The system is also reliable. It does not matter, technically speaking, if the weather is humid and hot in China or Mexico, or bitterly cold in Solingen, Germany. The process is reproducible. And independent. There is efficiency in the system. The core of each drying system is the heat pump technology. It is efficient by its very nature. It is even more efficient in a closed system. And it is, thus, faster and in strict time.

Helpful Cost Reduction

As early as in 2017, Harter dryers were classified as future technology eligible for government subsidy. This implies that customers may apply for grants amounting to up to 40 percent of the cost incurred.

Specialized energy consultants may open the doors to the relevant government funds. BIA went another way applying for subsidy by the state of North Rhine-Westphalia in support of their new hexavalent chromium free plant.

Aside from government subsidy, heat pump based condensation drying is a cost-effective technology in itself. Running cost of operation is reduced because the connected rating of these systems is always much lower than that of conventional hot air type or other energy-intensive systems. Each dryer includes an automatic lid system. Also, the ducting between the dryer and the dehumidification module is insulated. The precious heat is thus retained in the system.

Proof of this is provided by figures in applications for government subsidy approved so far. Operators of rack dryers may reduce

the energy spent by as much as 82 percent, carbon dioxide emitted by 72 percent. Some of these figures are even higher for bulk material applications.

All drying systems by Harter GmbH have been in operation with BIA until today and have perfectly dried their refined products. Harter continues to be on the side of the automotive specialist as a reliable technology partner, say Specht and Becker in conclusion. *BIA considers the choice of the Harter drying technology to be the proper decision to continue to walk on the path of success,* says Zabel in summary.

▷ www.harter-gmbh.de

▷ www.bia-group.com

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